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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,628	07/01/2003	Timothy B. Cribbs	57761.000188	9876

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EXAMINER	
KOSOWSKI, ALEXANDER J	

ART UNIT	PAPER NUMBER
2125	

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,628	CRIBBS, TIMOTHY B.	
	Examiner	Art Unit	
	Alexander J Kosowski	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/9/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1) Claims 1-20 are presented for examination in light of the amendment filed 12/1/04. This is a second non-final rejection.

Claim Objections

2) The objection to claim 1 from the previous office action is withdrawn in light of the amendment filed 12/1/04.

Claim Rejections - 35 USC § 103

3) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4) Claims 1-2, 4-7, 9-12, 14-17 and 19-20 rejected under 35 U.S.C. 103(a) as being unpatentable by Stack et al (U.S. PGPUB 2004/0102864), further in view of Spoerre et al (U.S. Pat 5,602,761).

Referring to claim 1, Stack teaches a system for analyzing an anomalous condition, comprising a process for producing a product, including plural subprocesses for performing operations on the product (Paragraph 0006, lines 13-16), wherein each subprocess includes at least one actuator for controlling the respective subprocess (Paragraph 0059), wherein each subprocess includes at least one sensor for measuring information pertaining to the status of the respective subprocess, and for generating an output based thereon (Paragraph 0006, lines 13-16 and Paragraph 0033); a parameter extractor for, for each of the subprocesses, receiving the output from the at least one sensor (Paragraph 0036); a knowledge base for storing data

including information which maps the sensor readings to associated anomalous conditions (Paragraph 0041), an analyzer for analyzing the plurality of data output from the parameter extractor with respect to the data stored in the knowledge base, and for generating a diagnostic result which diagnoses an anomalous condition in the process, and also identifies at least one of the subprocesses which has caused the anomalous condition (Paragraph 0043), and control logic for using the diagnostic result to affect corrective action to the at least one subprocess which has caused the anomalous condition by adjusting at least one actuator that controls the at least one subprocess (Paragraph 0053).

However, Stack does not explicitly teach generating at least one representative value that is characteristic of a pattern expressed in the output, the parameter extractor thus generating a plurality of representative values for the process as a whole, nor that the knowledge base stores data including a plurality of representative values, and also including information which maps the representative values to associated anomalous conditions and an analyzer for analyzing the plurality of representative values output from the parameter extractor with respect to the data stored in the knowledge base.

Spoerre teaches a system for analyzing anomalous conditions which collects sensor readings and creates RMS or averaged data (col. 5 line 27 through col. 6 line 7), and which then takes the data and checks it against a knowledge base which determines faults (col. 6 line 56 through col. 7 line 8).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to generate at least one representative value that is characteristic of a pattern expressed in the output, and to map those values to associated anomalous conditions in the invention taught

by Stack above since this would allow critical machine components to be monitored and possibly replaced when an abnormality occurs, which would increase the life of machine tools due to the minimization of stress under high machine vibrations (Spoerre, col. 3 lines 29-34).

Referring to claim 2, Stack teaches the system of claim 1, wherein the process is for manufacturing metal, plastic extrusion or paper-based products (Paragraph 0029).

Referring to claim 4, Stack teaches the system of claim 1, wherein the analyzer is configured to provide a diagnosis based on samples taken from the at least one sensor for one discrete product (Paragraph 0043).

Referring to claim 5, Stack teaches the system of claim 1, wherein the analyzer is configured to generate summary values for respective discrete products, and to provide a diagnosis based on the summary values (Paragraph 0046).

Referring to claim 6, Stack teaches a system comprising a parameter extractor for, for each of a plurality of subprocesses, receiving the output from at least one sensor, the parameter extractor thus generating a plurality of data for the process as a whole (Paragraph 0036); a knowledge base for storing data, and also including information which maps the data to associated anomalous conditions (Paragraph 0041), an analyzer for analyzing the plurality of data output from the parameter extractor with respect to the data stored in the knowledge base, and for generating a diagnostic result which diagnoses an anomalous condition in the process and also identifies at least one of the subprocesses which has caused the anomalous condition (Paragraph 0043).

However, Stack does not explicitly teach generating at least one representative value that is characteristic of a pattern expressed in the output, the parameter extractor thus generating a

plurality of representative values for the process as a whole, nor that the knowledge base stores data including a plurality of representative values, and also including information which maps the representative values to associated anomalous conditions and an analyzer for analyzing the plurality of representative values output from the parameter extractor with respect to the data stored in the knowledge base.

Spoerre teaches a system for analyzing anomalous conditions which collects sensor readings and creates RMS or averaged data (col. 5 line 27 through col. 6 line 7), and which then takes the data and checks it against a knowledge base which determines faults (col. 6 line 56 through col. 7 line 8).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to generate at least one representative value that is characteristic of a pattern expressed in the output, and to map those values to associated anomalous conditions in the invention taught by Stack above since this would allow critical machine components to be monitored and possibly replaced when an abnormality occurs, which would increase the life of machine tools due to the minimization of stress under high machine vibrations (Spoerre, col. 3 lines 29-34).

Referring to claim 7, see rejection of claim 2 above.

Referring to claim 9, see rejection of claim 4 above.

Referring to claim 10, see rejection of claim 5 above.

Referring to claim 11, Stack teaches a method comprising, for each of a plurality of subprocesses, providing sensor output from at least one sensor used to measure information pertaining to the status of the respective subprocess (Paragraph 0006, lines 13-16 and Paragraph 0033), generating a plurality of data for the process as a whole (Paragraph 0036); retrieving data

from a knowledge base, including information which maps the data to associated anomalous conditions (Paragraph 0041), analyzing the plurality of data output from the parameter extracting step with respect to the data stored in the knowledge base, and for generating a diagnostic result which diagnoses an anomalous condition in the process, and also identities at least one of the subprocesses which has caused the anomalous condition (Paragraph 0043), and using the diagnostic result to affect corrective action to the at least one of the subprocesses which has caused the anomalous condition by adjusting at least one actuator that controls the at least one subprocess (Paragraph 0053).

However, Stack does not explicitly teach generating at least one representative value that is characteristic of a pattern expressed in the output, the parameter extractor thus generating a plurality of representative values for the process as a whole, nor that the knowledge base stores data including a plurality of representative values, and also including information which maps the representative values to associated anomalous conditions and an analyzer for analyzing the plurality of representative values output from the parameter extractor with respect to the data stored in the knowledge base.

Spoerre teaches a system for analyzing anomalous conditions which collects sensor readings and creates RMS or averaged data (col. 5 line 27 through col. 6 line 7), and which then takes the data and checks it against a knowledge base which determines faults (col. 6 line 56 through col. 7 line 8).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to generate at least one representative value that is characteristic of a pattern expressed in the output, and to map those values to associated anomalous conditions in the invention taught

by Stack above since this would allow critical machine components to be monitored and possibly replaced when an abnormality occurs, which would increase the life of machine tools due to the minimization of stress under high machine vibrations (Spoerre, col. 3 lines 29-34).

Referring to claim 12, see rejection of claim 2 above.

Referring to claim 14, see rejection of claim 4 above.

Referring to claim 15, see rejection of claim 5 above.

Referring to claim 16, Stack teaches a method comprising the steps of: for each of a plurality of subprocesses, extracting at least one representative value that is characteristic of a pattern expressed in the output of at least one sensor, thus generating a plurality of representative values for the process as a whole (Paragraph 0036); retrieving data from a knowledge base, the data including a plurality of representative values, and also including information which maps the representative values to associated anomalous conditions (Paragraph 0041), and analyzing the plurality of representative values output from the parameter extracting step with respect to data stored in a knowledge base, and for generating a diagnostic result which diagnoses an anomalous condition in the process, and also identifies at least one of the subprocesses which has caused the anomalous condition (Paragraph 0043).

Referring to claim 17, see rejection of claim 2 above.

Referring to claim 19, see rejection of claim 4 above.

Referring to claim 20, see rejection of claim 5 above.

Claim Rejections - 35 USC § 103

5) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6) Claims 3, 8, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stack, further in view of Spoerre, further in view of Isobe et al (U.S. Pat 6,068,887).

Referring to claim 3, Stack and Spoerre teach the above. However, they do not explicitly teach that the process is for manufacturing metal products, and the process includes the following subprocesses: a hot rolling subprocess for reducing the thickness of the metal products in a heated state, a pickling subprocess for removing unwanted material from the metal products, a cold rolling subprocess for reducing the thickness of the metal products in a cold state using a plurality of rolling stands, and an annealing subprocess for heating and subsequently cooling the metal product.

Isobe teaches a process for producing steel which utilizes hot rolling, pickling, cold rolling and annealing in order to produce the product (col. 1 lines 13-31).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize manufacturing metal products using the process taught by Isobe in the invention taught above since the steps of hot rolling, pickling, cold rolling and annealing are well known in the art of producing steel sheets (Isobe, col. 1 lines 13-31), and since Stack teaches that exemplary embodiments of the invention can be implemented on any manufacturing devices (Stack, Paragraph 0029).

Referring to claims 8, 13 and 18, see rejection of claim 3 above.

Response to Arguments

8) All arguments are rendered moot in view of the new rejection above.

Conclusion

7) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wang et al (U.S. Pat 5,566,092) – teaches a machine fault diagnostic system

8) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 571-272-3744. The examiner can normally be reached on Monday through Friday, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. In addition, the examiner's RightFAX number is 571-273-3744.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Alexander J. Kosowski
Patent Examiner
Art Unit 2125

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100